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10/501,041	07/08/2004	Tetsuya Machida	TIP-04-1168	3180

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EXAMINER	
CHEN, VIVIAN	
ART UNIT	**PAPER NUMBER**
1773	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/501,041	MACHIDA ET AL.	
	Examiner	Art Unit	
	Vivian Chen	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *26-29,31-33,35 and 37-55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *53* is/are allowed.

6)☒ Claim(s) *26-29,31-33,35,37-42,44-52,54 and 55* is/are rejected.

7)☒ Claim(s) *43/(26-27)* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-24, 30, 34, 36 have been cancelled by Applicant.

Withdrawal of Finality

1. The finality of the previous Office Action is withdrawn in view of the newly discovered reference(s) and further reconsideration of the prior art of record. New grounds of rejections follow.

Withdrawal of Indicated Allowability

2. The indicated allowability of claims 26-27 and claims 28-29, 31-33, 35, 37-42, 44-52, 54-55 is withdrawn in view of the newly discovered reference(s) and further reconsideration of the prior art of record. New grounds of rejections follow.

Specification

3. A substitute specification is required pursuant to 37 CFR 1.125(a) because the present specification comprises of two columns of specification in landscape orientation. 37 CFR 1.52(a)(1)(iii) requires that the specification should be presented in portrait orientation. Furthermore, 37 CFR 1.5.2(b)(2)(iii) specifies that the specification should present with one column of text per page.

A substitute specification must not contain new matter. The substitute specification must be submitted with markings showing all the changes relative to the immediate prior version of

the specification of record. The text of any added subject matter must be shown by underlining the added text. The text of any deleted matter must be shown by strike-through except that double brackets placed before and after the deleted characters may be used to show deletion of five or fewer consecutive characters. The text of any deleted subject matter must be shown by being placed within double brackets if strike-through cannot be easily perceived. An accompanying clean version (without markings) and a statement that the substitute specification contains no new matter must also be supplied. Numbering the paragraphs of the specification of record is not considered a change that must be shown.

Claim Rejections - 35 USC § 103

4. Claims 26-27 and claims 28-29, 31-32, 37-39, 41-42, 44-50, 52, 54-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over:

HORIE ET AL (US 4,421, 887);

in view of SCHMIDT ET AL (US 2002/0022099);

and in view of ULLMANN'S ENCYCLOPEDIA OF INDUSTRIAL CHEMISTRY (ULLMANN'S).

HORIE ET AL discloses a biaxially oriented polyester film containing transition metal oxide particles selected from the oxides of metals selected from the 4th to 6th periods of Groups V to VIII of the periodic table (e.g., iron oxide, copper oxide, etc), wherein the particles have a typical size of 0.1-1 microns in typical amounts of 0.8 parts by weight or less. The polyester is typically comprises ethylene terephthalate. The film has a typical thickness of 15 microns and is suitable for magnetic recording media and other applications. After orientation, the film is heat-

set. (entire document, e.g., line 20-35, col. 2; line 34-66, col. 4; line 1-15, col. 5; Example 1, etc.)

SCHMIDT ET AL discloses that it is well known in the art that crystallizable polymers typically have a higher melting point when in crystalline form (i.e., crystallized) than when in amorphous form. (paragraph 0087).

ULLMANN'S discloses that it is well known in the art that after biaxial orientation, polyester films are typically heat-set (i.e., crystallized). The reference further discloses that it is well known in the art to use polyester films in numerous applications in addition to magnetic recording media, such as capacitors, transfer films, etc. (sections 2.3.2; section 7)

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the biaxially oriented films of HORIE ET AL in known polyester film applications (e.g., cards, electronic devices, transfer films, etc.) in order to produce useful products with superior film handling properties, abrasion resistance, and other desirable physical properties. Since polyester films are typically subjected to heat-setting to induce crystallization to 'lock in' molecular orientation and since crystallizable polymers (e.g., polyester) in crystallized form typically has a higher melting point than when in amorphous form as disclosed in SCHIMDT ET AL, the Examiner has reason to believe that the biaxially oriented, heat-set films of HORIE ET AL are at least partially crystalline in nature and therefore would inherently exhibit: (1) the specified difference in the melting points between the first test run versus a second test run within the range recited in the claims; and (2) the specified difference in the melting points between the oriented film and the polymer resin forming the film, because the biaxially oriented, heat-set films possess greater crystallinity (induced during conventional

orientation and heat-setting processes) in the first run and therefore a greater melting point in comparison to: (1) a second run sample which has relatively less crystallinity (i.e., the polymer in the film is now in a relatively more amorphous state) due to the heating and melting experienced during the first run; or (2) the amorphous or relatively non-crystallized polymer resin used to form said oriented film; therefore the Examiner has basis for shifting the burden of proof to applicant as in In re Fitzgerald et al., 205 USPQ 594. It would have been obvious to minimize the amounts of large and/or coarse aggregated particles in the film (claims 32, 42) in order to minimize physical defects. One of ordinary skill in the art would have used conventional methods (e.g., surface treatments of particles, etc.) to minimize the formation of voids around particles in the film (claim 39) in order to reduce the formation of undesirable haze, reduce physical defects, and/or to avoid particle dropouts. It would have been obvious to one of ordinary skill in the art to adjust the conditions of the post-stretching film treatments (e.g., temperature and duration of heat-setting, film relaxation, etc.) in order to obtain the desired degree of dimensional stability and to minimize undesirable shrinkage (claims 44-45) under specified thermal conditions.

5. Claims 26-27 and claims 28-29, 31-32, 37, 39, 41-42, 44-50, 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over:

KONAGAYA ET AL (US 5,434,000);

in view of SCHMIDT ET AL (US 2002/0022099);

and in view of ULLMANN'S ENCYCLOPEDIA OF INDUSTRIAL CHEMISTRY (ULLMANN'S).

KONAGAYA ET AL discloses a biaxially oriented polyester film containing particles of transition metal oxides (e.g., titanium dioxide, zinc oxide, etc.), wherein the particles have a typical primary size of less than 0.1 microns in typical amounts of 100-20000 ppm, with coarse agglomerates being undesirable. The polyester is typically comprises ethylene terephthalate or ethylene naphthalate. The film has a typical thickness of 15 microns and is suitable for magnetic recording media. After orientation, the film is heat-treated. (entire document, e.g., line 13-22, col. 2; column 3; Example 1, etc.)

SCHMIDT ET AL discloses that it is well known in the art that crystallizable polymers typically have a higher melting point when in crystalline form (i.e., crystallized) than when in amorphous form. (paragraph 0087).

ULLMANN'S discloses that it is well known in the art that after biaxial orientation, polyester films are typically heat-set (i.e., crystallized). The reference further discloses that it is well known in the art to use polyester films in numerous applications in addition to magnetic recording media, such as capacitors, transfer films, etc. (sections 2.3.2; section 7)

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the biaxially oriented films of KONAGAYA ET AL in known polyester film applications (e.g., cards, electronic devices, transfer films, etc.) in order to produce useful products with superior film handling properties, abrasion resistance, and other desirable physical properties. Since polyester films are typically subjected to heat-treatment (i.e., heat-setting) to induce crystallization to 'lock in' molecular orientation and since crystallizable polymers (e.g., polyester) in crystallized form typically has a higher melting point than when in amorphous form as disclosed in SCHIMDT ET AL, the Examiner has reason to believe that the

biaxially oriented, heat-set films of KONAGAYA ET AL are at least partially crystalline in nature and therefore would inherently exhibit: (1) the specified difference in the melting points between the first test run versus a second test run within the range recited in the claims; and (2) the specified difference in the melting points between the oriented film and the polymer resin forming the film, because the biaxially oriented, heat-set films possess greater crystallinity (induced during conventional orientation and heat-setting processes) in the first run and therefore a greater melting point in comparison to: (1) a second run sample which has relatively less crystallinity (i.e., the polymer in the film is now in a relatively more amorphous state) due to the heating and melting experienced during the first run; or (2) the amorphous or relatively non-crystallized polymer resin used to form said oriented film; therefore the Examiner has basis for shifting the burden of proof to applicant as in In re Fitzgerald et al., 205 USPQ 594. It would have been obvious to minimize the amounts of large and/or coarse aggregated particles in the film (claims 32, 42) in order to minimize physical defects. One of ordinary skill in the art would have used conventional methods (e.g., surface treatments of particles, etc.) to minimize the formation of voids around particles in the film (claim 39) in order to reduce the formation of undesirable haze, reduce physical defects, and/or to avoid particle dropouts. It would have been obvious to one of ordinary skill in the art to adjust the conditions of the post-stretching film treatments (e.g., temperature and duration of heat-setting, film relaxation, etc.) in order to obtain the desired degree of dimensional stability and to minimize undesirable shrinkage (claims 44-45) under specified thermal conditions.

6. Claims 35, 40, 44 (as dependent on claims 25) are rejected under 35 U.S.C. 103(a) as being unpatentable over:

(b) KONAGAYA ET AL (US 5,434,000), in view of SCHMIDT ET AL (US 2002/0022099); and in view of ULLMANN'S ENCYCLOPEDIA OF INDUSTRIAL CHEMISTRY (ULLMANN'S);

as applied to claims 26-27;

and further in view of TSUNEKAWA ET AL (US 6,420,011).

TSUNEKAWA ET AL discloses that it is desirable to orient and heat-set polyester films (e.g., polyethylene terephthalate) to produce films with a planar orientation of 0.03-0.19, a heat shrinkage of 1% or less at 100 C, and a total Young's modulus in both the machine and transverse directions of 8-25 GPa, in order to obtain films with desirable physical properties and dimensional stability useful for numerous applications. (line 1-35, col. 1; line 15-20, col. 5; line 50, col. 6 to line 65, col. 7)

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use conventional orientation and heat-setting methods to form the films of HORIE ET AL or KONAGAYA ET AL to obtain film properties comparable to those disclosed in TSUNEKAWA ET AL in order to produce films with desirable performance characteristics.

7. Claims 26-27 and claims 28-29, 31-33, 37, 39-42, 44-51, 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over:

TSUKAMOTO ET AL (US 6,124,043);

in view of SCHMIDT ET AL (US 2002/0022099);

and in view of ULLMANN'S ENCYCLOPEDIA OF INDUSTRIAL CHEMISTRY (ULLMANN'S).

TSUKAMOTO ET AL discloses a biaxially oriented polyethylene-2,6-naphthalate film containing particles of transition metal oxides (e.g., titanium dioxide, etc.), wherein the particles have a typical primary size of 0.05-5 microns in typical amounts of 0.001-1 wt%. The film has a typical thickness of 0.5-250 microns and is suitable for magnetic recording media, imaging applications, etc. The film has a Young's modulus in both the machine and transverse directions of at least 500 kg/mm^2 and a plane orientation coefficient of 0.230-0.275. After orientation, the film is heat-set. (entire document, e.g., line 59-68, col. 5; line 10-25, col. 6; line 60, col. 6 to line 2, col. 7; line 11-28, col. 7; Example 1, etc.)

SCHMIDT ET AL discloses that it is well known in the art that crystallizable polymers typically have a higher melting point when in crystalline form (i.e., crystallized) than when in amorphous form. (paragraph 0087).

ULLMANN'S discloses that it is well known in the art that after biaxial orientation, polyester films are typically heat-set (i.e., crystallized). The reference further discloses that it is well known in the art to use polyester films in numerous applications in addition to magnetic recording media, such as capacitors, transfer films, etc. (sections 2.3.2; section 7)

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the biaxially oriented films of TSUKAMOTO ET AL in known polyester film applications (e.g., cards, electronic devices, transfer films, etc.) in order to produce useful products with superior film handling properties, abrasion resistance, and other desirable physical properties. Since polyester films are typically subjected to heat-treatment (i.e., heat-

setting) to induce crystallization to 'lock in' molecular orientation and since crystallizable polymers (e.g., polyester) in crystallized form typically has a higher melting point than when in amorphous form as disclosed in SCHIMDT ET AL, the Examiner has reason to believe that the biaxially oriented, heat-set films of TSUKAMOTO ET AL are at least partially crystalline in nature and therefore would inherently exhibit: (1) the specified difference in the melting points between the first test run versus a second test run within the range recited in the claims; and (2) the specified difference in the melting points between the oriented film and the polymer resin forming the film, because the biaxially oriented, heat-set films possess greater crystallinity (induced during conventional orientation and heat-setting processes) in the first run and therefore a greater melting point in comparison to: (1) a second run sample which has relatively less crystallinity (i.e., the polymer in the film is now in a relatively more amorphous state) due to the heating and melting experienced during the first run; or (2) the amorphous or relatively non-crystallized polymer resin used to form said oriented film; therefore the Examiner has basis for shifting the burden of proof to applicant as in In re Fitzgerald et al., 205 USPQ 594. It would have been obvious to minimize the amounts of large and/or coarse aggregated particles in the film (claims 32, 42) in order to minimize physical defects. One of ordinary skill in the art would have used conventional methods (e.g., surface treatments of particles, etc.) to minimize the formation of voids around particles in the film (claim 39) in order to reduce the formation of undesirable haze, reduce physical defects, and/or to avoid particle dropouts. It would have been obvious to one of ordinary skill in the art to adjust the conditions of the post-stretching film treatments (e.g., temperature and duration of heat-setting, film relaxation, etc.) in order to obtain

the desired degree of dimensional stability and to minimize undesirable shrinkage (claims 44-45) under specified thermal conditions.

Examiner's Comments

8. While the Examples in the specification indicate some criticality with respect to the effect of the transition metal oxide on the recited difference in melting points between film and resin, the showing in the specification is not commensurate in scope with the present claims (e.g., with respect to the transition metal oxide used, primary and secondary particle sizes, particle content, polymer used, etc.).

Allowable Subject Matter

9. Claim 53 is allowable over the prior art of record.

10. Claim 43 (as dependent on claims 26-27) are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to disclose or teach biaxially oriented polymer films containing transition metal oxide particles: (1) wherein the film has the recited storage modulus (claims 43, 53).

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vivian Chen whose telephone number is (571) 272-1506. The examiner can normally be reached on Monday through Thursday from 8:30 AM to 6 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney, can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

The General Information telephone number for Technology Center 1700 is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 26, 2007



Vivian Chen
Primary Examiner
Art Unit 1773